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Title: IMPROVED ARRANGEMENT TO CONFIGURE
CONSTRUCTION COMPONENTS

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IMPROVED ARRANGEMENT TO CONFIGURE CONSTRUCTION
COMPONENTS

D E S C R I P T I O N

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OBJECT OF THE INVENTION

The present specification refers to an application for Patent of Invention regarding an improved arrangement to configure construction components, whose basic interests lies in providing a combination of metal and plastic, allowing the manufacture of construction parts achieving an assembly with properties which would not be possible by using said materials separately.

FIELD OF THE INVENTION

This invention is applicable to the industry dedicated to the manufacture of structural construction components for general use in engineering and architecture.

BACKGROUND OF THE INVENTION

The existence of concrete made from a mixture of cement, water, aggregates and additives is known, to form parts participating in the execution of building works, it being possible to use mass concrete or reinforced concrete which improve their mechanical properties on incorporating metallic reinforcements.

However, it would be desirable to have the possibilities offered by materials like plastic, that is, to provide essential characteristics it lacks for its inclusion in this type of activity.

The applicant is not aware of arrangements with the properties and level of improvement as those of the object of the present invention.

35 **DESCRIPTION OF THE INVENTION**

The improved arrangement for the configuration of construction components has a series of advantages requiring a detailed explanation.

5 It is relevant to indicate that the combination of plastic with metal provides a composite having better mechanical features than those individually offered by the separate materials, it being possible to mention:

- Resistance
- Durability
- 10 • Lightness
- Colour
- Resonance or minimum vibrations
- Texture
- Conformability
- 15 • Corrosion resistance
- Reduced conductivity
- Economic
- Easy to handle in its application and use

20 All these features integrate the base supporting the key of the invention.

The object of the invention consists of an internal metal structure over which a plastic casting is located.

25 The proposed arrangement permits the limits of either component to be surpassed with the benefits offered by the other, constituting a body providing symbiosis between both materials.

30 The plastic used to conform the combination will be different according to the requirements of each specific situation, having a plurality of metallic components to constitute the structure located inside the external material.

35 Moreover, a metallic reinforcement laminate or plate is provided in the bolted joints, preventing the drawbacks they involve.

By using moulds, the casting of plastic material is achieved employing any of the processes currently used for the metallic structure to be covered by it.

5 The sizing and shape of the parts are determined by criteria related to the ease of practical handling, resistance, weight and economy.

The invention proposed may be used in the production of any type of part with applications directed to construction and installation in general.

10 **DESCRIPTION OF THE DRAWINGS**

To complete the description being made and to contribute to a better understanding of the features of the invention, the present specification is accompanied by three sheets of drawings showing the following with
15 an illustrative and non-limiting character:

Figure 1 shows a side elevation view of rails and beams prepared as from the improved arrangement to configure construction components.

20 Figure 2 shows a section view of the rail or beam considered in the previous figure, in which the plastic enveloping material, the metal plates and reinforcement may be observed.

Figure 3 shows a view of different sections in which the enveloping material and metallic components
25 occupying the interior are distinguished, such that section A correspond to a pipe, section B to a rod, section C to a channel, section D to an angle, section E to a flatbar, section F to a "Z", section G to a profile and section H, to a beam.

30 Figure 4, contemplates a view of two sections where the outer plastic and inner metal covers are observed, such that section I represents a corrugated plate and section J, a smooth plate.

Figure 5, refers to a side elevation view of a
35 structure formed by a beam and a column joined by

bolts.

PREFERRRED EMBODIMENT OF THE INVENTION

The improved arrangement to configure construction components is constituted as from the combination of
5 two materials, namely plastic and metal.

The plastic used has different properties according to the types determined for each case, receiving the generic name of enveloping material (2) or (12) or (22) or (32) or (42) or (52) or (62) or (72)
10 or (82) or (92) or (102) or (112), it being possible to mention different types of plastic resin, Thermo and Duraplastic, like phenoplastes, polycarbonate, ABS, polyethylene and resins.

On the other hand, the metallic material (3) or
15 (13) or (23) or (33) or (43) or (53) or (63) or (73) or (83) or (93) or (103) or (113) incorporated, has any form according to the selected application, its configuration being possible as from G-40 corrugated steel with a resistance value of 2,800 Kg/cm², G-60
20 corrugated steel with a resistance value of 4,200 Kg/cm², rods, electrowelded meshes, reinforcements, frames or shears, zinc and aluminium plates or steel tolas, wires and cables.

The combination is produced such that inside the
25 plastic casting (2) or (12) or (22) or (32) or (42) or (52) or (62) or (72) or (82) or (92) or (102) or (112), the metallic structure (3) or (13) or (23) or (33) or (43) or (53) or (63) or (73) or (83) or (93) or (103) or (113) is introduced, obtaining a body in which the
30 constitutive components compensate the lacks of the individual materials.

Likewise, the existence of a metallic laminate or plate (4) and (4') or (84) or (114) and (114'), which act as a reinforcement to prevent the external plastic
35 casting (2) or (12) or (22) or (32) or (42) or (52) or

(62) or (72) or (82) or (92) or (102) or (112) from checking or splitting, problems that arise as a result of the stresses and shearing taking place in the bolted joints.

5 With the object of reaching the final shape, a mould is prepared permitting casting of the plastic material (2) or (12) or (22) or (32) or (42) or (52) or (62) or (72) or (82) or (92) or (102) or (112), the component enveloping the internal metallic structure
10 (3) or (13) or (23) or (33) or (43) or (53) or (63) or (73) or (83) or (93) or (103) or (113), using for this object any of the methods permitted.

 It is reasonable to make use of processes like casting by injection, extrusion, direct casting, by
15 transfer or cold.

 In the joints or extensions of the parts or components, a fastening will be used that permits the determined resistance and statism making use of plates and bolts, assemblies, plastic-resistant adhesives or
20 combinations of the above.

 The composite proposed may be used in the production of rails and beams (1), pipes (10), rods (20), channels (30), angles (40), flatbars (50), "Z" (60), profiles (70), beams (80), corrugated plates
25 (90), smooth plates (100) or structures (110) in which bolts (115) exist which join the beam and the column.

 It is not considered necessary to extend this description for any expert in the matter to understand the scope of the invention and the advantages derived
30 from it.

 The materials, shape, size and arrangement of the components may be varied, provided this does not change the essentiality of the invention.

 The terms in which the report specification been
35 written should always be interpreted in the widest and

non-limiting sense.

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